

CHRONIC WASTING DISEASE AND DEER MANAGEMENT ON PRIVATE LAND

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Abstract: Chronic wasting disease (CWD) is a degenerative, fatal disease of deer, elk, and moose first discovered in Colorado in the 1960s. The disease can be transmitted among animals and over the past 6 decades, the disease has spread to more than 25 states and 3 provinces. There is no effective cure for the disease and so limiting its spread is the best management action. Government agencies act where they can to limit the spread of CWD, but landowners and deer managers also may take action to reduce the risk of deer they manage acquiring CWD and to limit the disease's prevalence if it is already present. There is no documented case of people being infected with CWD but caution is warranted. The final section of this management bulletin describes actions people can take to limit their exposure to CWD.

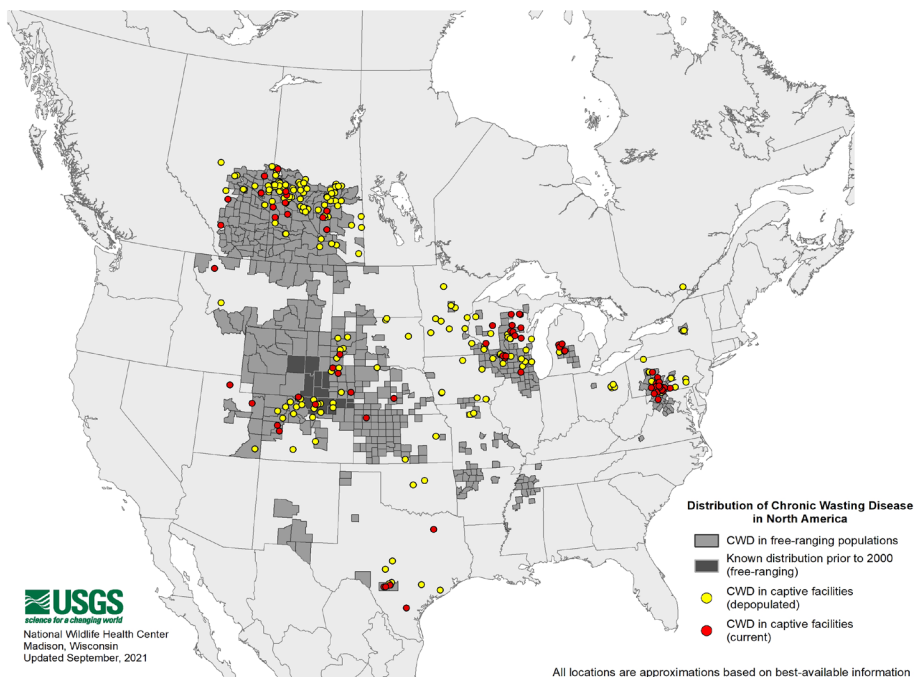
INTRODUCTION

Chronic wasting disease (CWD) is a disease of the deer family (e.g., deer, elk, moose, and caribou) that was first noticed in the 1960s in captive mule deer in Colorado. An intense research effort in the 1970s and early 1980s characterized the disease as a transmissible spongiform encephalopathy, similar to bovine spongiform encephalopathy (mad cow disease) in cows, scrapie in sheep, and Creutzfeldt-Jakob disease in humans.

These diseases are caused by the misfolding of a naturally occurring protein, known as the prion protein, or simply prion. By misfolding, the prion becomes resistant to breakdown, capable of being transmitted between animals, and able to cause misfolding of adjacent normal proteins, thereby setting off a chain reaction. As these altered proteins accumulate in the central nervous system, clinical symptoms become apparent as a lack of coordination, a wide stance, excessive drinking and urination, lowered head and ears, and subtle head tremors. The

animal reduces food intake and loses weight. The time from infection to onset of symptoms is highly variable, from several months to 2 years or more. The time from the onset of symptoms to death varies from days to a year but is typically weeks.

Landowners should be concerned about CWD because once the disease is established, there is no known management action that will remove it from the population or from the landscape. Prions from CWD-positive animals remain infectious in the environment for years (Miller et al. 2004). Deer infected with CWD have lower survival than deer without the disease



Known distribution of Chronic Wasting Disease in North America in August 2021. U.S. Geological Survey. Visit the USGS site to view an updated map.



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Understanding the full effects of chronic wasting disease on deer populations will require long-term research.

(Edmunds et al. 2016, DeVivo et al. 2017). Adult male deer typically have the highest prevalence of CWD in a population. Higher mortality of deer with CWD can cause populations to decline, especially populations where forage resources limit fawn recruitment (Edmunds et al. 2016, Foley et al. 2016, DeVivo et al. 2017). Initially the disease spreads slowly in a population and it may take 20 to 30 years before population effects are evident.

There is currently no evidence that people have developed disease from eating venison from CWD-positive deer, and while the risk is probably low, the Centers for Disease Control recommends people do not eat meat from CWD-positive deer (Osterholm et al. 2019, <https://www.cdc.gov/prions/cwd/prevention.html>). To learn more about CWD, go to <http://cwg-info.org/cwd-overview/>.

State wildlife agencies take actions to monitor and manage CWD. However, landowners also can take action to reduce the risk of deer on their property contracting the disease, to limit the impact of the disease on their property, and to limit their own exposure to malformed prion proteins. This guide provides management options for landowners. We have based these recommendations on published research when possible and relied on the extensive literature reviewed in Gillin and Mawdsley (2018). While there is much that is not known about managing CWD (Uehlinger et al. 2016), there is a great deal known about how to manage wildlife in the presence of infectious diseases. When assessing the risk of various deer management actions for which

the effects on CWD have not been studied, we rely on widely-accepted principles of infectious disease management.

This management guide is organized into 3 sections. The first section provides strategies you can employ to protect deer on your property from exposure to CWD. The second section describes management actions to employ if your property is in an area where CWD has been detected. These actions will reduce the spread of CWD among deer on your property. The final section lists actions you can take to reduce the risk of you being exposed to CWD. Each section has a list of considerations and actions you could take. The action with the lowest CWD risk is the Best Management Practice. Other actions are listed with increasing CWD risk. Note that designations such as low risk or high risk represent a hierarchy that is only meaningful in that category. Moving deer with unknown CWD status is high risk, but that practice does not necessarily carry the same risk as a high-risk action from a different section, such as surface disposal of tissue from a CWD-positive deer.



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Chronic wasting disease threatens white-tailed deer populations and, once established, cannot be eradicated.

PROTECT DEER ON YOUR PROPERTY FROM CWD

Because there is currently no way to eradicate CWD once it becomes established in an area, the first objective of any CWD management program should be to keep the deer that you manage from becoming exposed to CWD. Following are ways CWD could be transported to a new area, and actions you can take to reduce the risk of deer on your land being exposed.

Introducing deer (or any susceptible species) onto your property from other populations

- i. Best Practice – do not introduce deer to your property;
- ii. Moderate Risk – introduce deer from free-ranging populations outside any CWD management zone and in which CWD tests are all “not detected;”
- iii. Moderate to High Risk – introduce deer from well-vetted, movement-qualified captive herds;
- iv. High Risk – introduce deer from sources of unknown CWD status.

Disposing of deer entrails, bones, hide, and meat trimmings. Greatest risk is from brain, spinal cord, and lymph node tissue.

- i. Best Practice – incinerate, especially if deer came from an area with CWD (heat to 1,832°F in approved incinerator; Gillin and Mawdsley 2018);
- ii. Low Risk – dispose in a permitted landfill (Jacobson et al. 2009); alternative Best Practice if deer came from an area where CWD has not been detected;
- iii. Low Risk – bury where deer and scavengers will not come into contact; leave tissue on site where deer was harvested;
- iv. Moderate Risk – surface disposal of deer tissue from areas with no known CWD;
- v. High Risk – surface disposal of deer tissue from CWD positive populations.

Restrict natural deer movements

- i. Least Risky – fencing to restrict deer movement;
- ii. More Risky (depending on distribution of CWD near property) – no barriers to deer movement.

Equipment that could be tainted with prions

- i. Best Practice – do not allow trailers, trucks, or other equipment that may be tainted with malformed prions onto your property;
- ii. Low Risk – Allow equipment onto your property but only after cleaning with an enzymatic detergent (such as Tergazyme™) and sterilizing with a 2% bleach solution;
- iii. High Risk – have no restrictions on equipment that can enter your property.

Use of deer urine lures

- i. Best Practice – do not disperse deer urine on your land (Plummer et al. 2017);
- ii. Low Risk – deploy deer urine on materials that will not leach, can be removed from property and disposed in a landfill, and use urine only from sources in which CWD tests are all “not detected;”
- iii. Moderate Risk – use of deer urine from known sources in which CWD tests are all “not detected” and dispersing the urine directly onto your property;
- iv. High Risk – use of deer urine from sources of unknown CWD status.

Source of feed products

- i. Best Practice – do not feed hay or other feed-stuffs from off the property (Pritzkow et al. 2015);
- ii. Low Risk – feeding hay or other plant material grown in CWD-tested areas with no known CWD;
- iii. High Risk – feeding hay or other feed-stuffs from areas where CWD has been detected or from an unknown source.

MANAGING DEER IN THE PRESENCE OF CWD

If you manage deer in an area where CWD has been detected or if deer on your property could have been exposed to CWD from past management practices, you should consider management actions to slow the rate of increase in CWD prevalence for deer on your property.

Monitoring status of CWD on your property and vicinity

- i. Best Practice – testing all deer harvested on your property and closely monitoring CWD surveillance data for your region from your state wildlife agency;
- ii. More Risky – not testing deer or monitoring CWD surveillance data for your region from your state wildlife agency.



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Observe deer on your property to detect sick deer which could be harvested during the hunting season and tested.

Monitoring health status of deer on your property

- i. Best Practice – monitoring deer on your property by taking note of deer that appear sick through observation or game camera photos and, during the hunting season, harvesting and testing deer that appear sick;
- ii. More Risky – not monitoring deer on your property or harvesting and testing sick deer.

Communication and management with your neighbors

- i. Best Practice – communicate with your neighbors to know if CWD has been detected on their property and to agree on management actions to minimize the exposure of deer in your area to CWD;
- ii. More Risky – not knowing the status of deer on neighboring properties and not working together to minimize exposure of deer in your area to CWD.

Feeding and baiting deer

- i. Best Practice – do not feed or bait (Thompson et al. 2008, Sorensen et al. 2014);
- ii. Moderate-High Risk – offering feed or bait but spreading feed or bait where deer will not come into close contact while consuming it;
- iii. Moderate-High Risk – offering feed or bait but feeding and baiting for short periods, e.g., only during the hunting season;
- iv. Moderate-High Risk – offering feed or bait but moving feed and bait sites frequently;
- v. High Risk – offering feed or bait at stations where multiple deer need to feed from the same point source (e.g., trough or feeding tube) and offering feed or bait year around at the same location.

Planting food plots for deer

- i. Best Practice – do not plant food plots;
- ii. Moderate Risk – planting large food plots;
- iii. High Risk – planting small food plots that concentrate deer foraging.

Water sources

- i. Best Practice – Provide multiple, large water sources well-distributed across the property;
- ii. More Risky – Having a small number of water sources which many animals use and which animals may need to travel long distances to access.

Managing deer density

- i. Best Practice – maintain low deer density to reduce rate of CWD transmission and spread from deer dispersal (Lutz et al. 2015, Potapov et al. 2016, Miller et al. 2020);
- ii. Moderate Risk – manage for lowest deer density that allows attainment of management goals;
- iii. High Risk – manage for high deer densities.

Managing deer harvest

- i. Best Practice – manage for young age classes by harvesting oldest deer in the population;
- ii. Best Practice – harvest deer that look sick, test for CWD, then dispose of carcasses, entrails, and



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Little is known about CWD transmission through drinking water but several large sources are likely best.

- bones appropriately (incinerate or dispose in a landfill if deer is positive for CWD);
- iii. More Risky – Managing for a high proportion of mature deer, especially mature males.



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Any management practice that concentrates deer may expose healthy deer to chronic wasting disease.

PROTECT YOURSELF FROM CWD

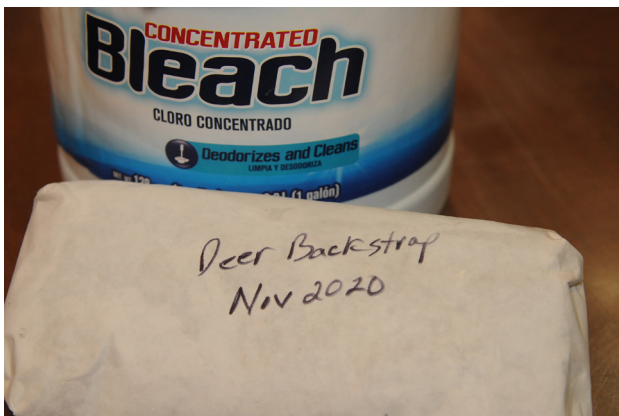
No cases of CWD infection in people have been documented, however mad cow disease, a related disease, can infect people. Furthermore, non-human primates can develop disease after being exposed to CWD. For these reasons, reducing your exposure to CWD is wise (<https://www.cdc.gov/prions/cwd/index.html>).

Handling deer carcasses

- i. Best Practice – wear disposable gloves when handling deer tissue and avoid contact with central nervous system tissue and lymph nodes;
- ii. Moderate Risk – not wearing gloves when handling deer tissue;
- iii. High Risk – handling central nervous system tissue and lymph nodes of deer in areas with CWD, especially if not wearing gloves.

Butchering deer carcasses

- i. Best Practice – only butchering deer carcasses on non-porous surfaces and using tools that have been sterilized using 2% bleach solution. Then clean (use enzymatic detergent such as Tergazyme™), wearing disposable gloves, and sterilizing all surfaces and tools after butchering;
- ii. Best Practice – knowing the source of all meat you butcher and only butchering carcasses for which CWD tests returned “not-detected;”



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Only eat meat from deer that have tested “not detected” for CWD and follow sanitary food handling protocols.



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Testing for chronic wasting disease is a key component of all CWD mitigation strategies.

- iii. High Risk – not sterilizing surfaces and tools before and after butchering deer carcasses and butchering carcasses that have not been tested for CWD, especially animals harvested in areas where CWD has been detected.

Eating deer meat

- i. Best Practice – only eating deer meat that has been tested and returned results of “not-detected.” Not eating lymph nodes or central nervous system tissue;
- ii. Moderate Risk – eating meat from deer of unknown CWD status and harvested from an area where CWD has been detected;
- iii. High Risk – eating meat from deer suspected of having CWD.

Taxidermy and skull preparation

- i. Best Practice – Test deer for CWD; do not handle tissue of deer that tested positive for CWD; avoid handling central nervous system tissue; wear disposable gloves; and clean all tools and work surfaces with an enzymatic detergent (such as Tergazyme™) and disinfect with 2% bleach solution;

Meat Processors

- i. Best Practices – Patronize processors that do not mix meat from different animals, that clean working surfaces and tools with 2% bleach solution between

animals, that require employees to wear disposable gloves that are changed between animals, and that will not process animals known to have tested positive for CWD;

- ii. More Risky – Patronizing processors that do not take precautions to avoid contaminating meat with infectious prions.

Cleaning and Decontamination

- i. Best Practices – Clean all potentially contaminated work surfaces with an enzymatic detergent (such as Tergazyme™) and disinfect with 2% bleach solution;
- ii. More Risky – Failing to clean all potentially contaminated work surfaces with an enzymatic detergent and disinfect with 2% bleach solution.

WEBSITES WITH ADDITIONAL INFORMATION ON CHRONIC WASTING DISEASE

<https://www.cdc.gov/prions/cwd/index.html>

<https://www.cdc.gov/prions/cwd/cwd-animals.html>

https://www.usgs.gov/centers/nwhc/science/chronic-wasting-disease?qt-science_center_objects=0#qt-science_center_objects

<https://www.usgs.gov/media/images/distribution-chronic-wasting-disease-north-america-0>

<http://cwg-info.org/>

<https://tpwd.texas.gov/huntwild/wild/diseases/cwd/>



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The future of deer herds in Texas depends on how we manage chronic wasting disease.

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